

**REMARKS**

I. **Status of the claims**

Claims 3-56 are pending. Claims 6, 13 and 14 are amended to recite "wherein the coelenteramid remains coordinated inside the (mutated) apoaequorin." Exemplary support for the amendments can be found throughout the specification, for instance, at page 1, lines 21-24, and page 11, lines 22-26, of the as-filed application. Claim 17 is amended to clarify the claim language in response to the Office's §112 rejection discussed below. Accordingly, these amendments do not add any new matter.

Claims 3-5, 10-12, and 18-56 have been withdrawn by the Office from consideration; however, Applicant preserves the right to file a divisional application on the non-elected claims.

II. **Rejection Under 35 U.S.C. § 112, ¶2**

Claim 17 stands rejected under 35 U.S.C. § 112, second paragraph, as allegedly indefinite in its recitation of "wherein the calcium ion or the divalent or trivalent ion that can be substituted for the calcium ion is one selected from the group consisting of a calcium ion, a strontium ion and a lead ion." Office Action, page 3. Applicant has amended claim 17 to clarify its language by deleting "calcium ion," thereby rendering moot the rejection.

III. **Rejection Under 35 U.S.C. § 102(b)**

The Office makes the following rejections under 35 U.S.C. § 102(b):

(1) Claims 6-9 and 13-17 as being anticipated by Kurose et al., *Bioluminescence of Ca<sup>2+</sup> -Binding Photoprotein Aequorin After Cysteine Modification*, Proc. Natl. Acad. Sci., Vol. 86, pp. 80-84 (1989) ("Kurose") (Office Action, pages 3-6);

(2) claims 6, 8, 9, and 14-17 as allegedly anticipated by Inouye et al., *Expression of the Gene and Fluorescence Characteristics of the Recombinant Protein*, FEBS Letters, Vol. 341, pp. 277-280 (1994) ("Inouye") (Office Action at 6-8); and

(3) claims 6, 8, 9, and 14-17 as allegedly anticipated by Kojima et al., *Mechanism Of The Redox Reaction of the Aequorea Green Fluorescent Protein (GFP)*, Tetrahedron Letters, Vol. 38, No. 16, pp. 2875-2878 (1997) ("Kojima") (Office Action at 8-10).

Applicant respectfully traverses the rejections.

For anticipation to be proper, a single prior art reference must teach every element of the claim either expressly or inherently. M.P.E.P. § 2131; *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987). In this case, however, none of the cited references, Kurose, Inouye, and Kojima teaches every element of the current claims, at least because those references do not teach a fluorescent protein "wherein the coelenteramid remains coordinated inside the apoaequorin."

As described in the specification, at page 4, lines 1-5, and also at page 14, lines 29-35, when calcium ions bind to aequorin composed of apoaequorin coelenterazine and molecular oxygen, apoaequorin instantaneously changes its structure, emits light and releases coelenteramid that is an oxide of coelenterazine. Applicant, however, has found that it is possible to make a novel fluorescent protein that comprises an

apoprotein, a coelenteramid, and a calcium ion, **wherein the coelenteramid remains coordinated inside the apoaequorin**. None of the cited references teaches or suggests the protein recited in claim 1 of the instant application.

As none of Kurose, Inouye, and Kojima teaches every element of the claims, they are not anticipatory references. Applicant respectfully submits that the rejections should therefore be withdrawn.

**IV. Nonstatutory Obviousness-type Double Patenting**

The Office provisionally rejects claims 6-9 and 14-17 as unpatentable on the ground of nonstatutory obviousness-type double patenting over claims 3-8 of U.S. Patent No. 7,396,655 ("the '655 patent"). Office Action, page 11. Applicant respectfully traverses this provisional rejection.

The **method** claims of the '655 patent recites a step of "adding a compound selected from the group consisting of imidazole and Guanidine-HCl to a solution of the luciferase," which is neither recited in, nor obvious over, claims 6-9 and 14-17 of the present application directed to fluorescent proteins. Accordingly, the pending claims are therefore patentably distinct from the claims of the '655 patent. Applicant respectfully requests the Office to withdraw the rejection.

**CONCLUSION**

In view of the foregoing amendment and remarks, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge  
any additional required fees to our Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,  
GARRETT & DUNNER, L.L.P.

Dated: September 18, 2009

By:   
Jessica H. Roark  
Reg. No. 54,869